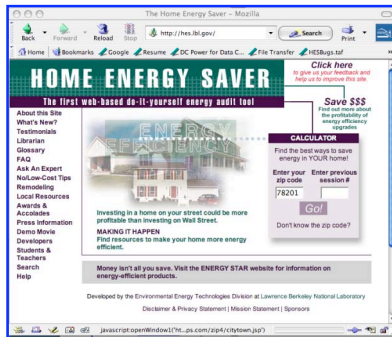
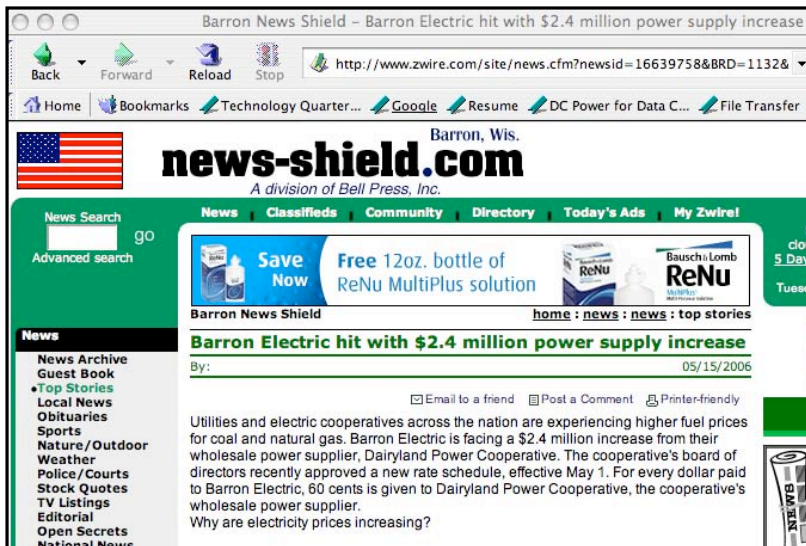


# The Home Energy Saver Do-it-Yourself Survey <http://HomeEnergySaver.lbl.gov>



Evan Mills - Lawrence Berkeley National Lab  
Touchstone Meeting • San Antonio • May 16, 2006

## Energy Efficiency Helps Utility Customers Offset Higher Prices



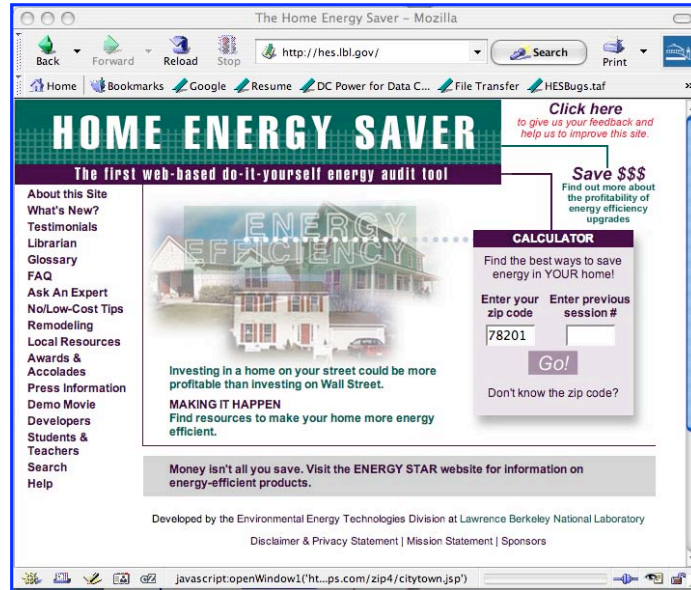
## Highlights

- **Technical**
  - First web energy calculator; non-proprietary; fuel-neutral; transparent assumptions/methods; ~350 “weather” locations across the U.S.
  - Whole-house scope (and includes system interactions)
  - Uses actual electricity tariffs for many locales
- **Deployment/Impact**
  - Broad content offerings, in addition to calculations
  - Extensive media coverage
  - ~75% will return/recommend
  - 35% of surveyed users say they have acted on results
  - New alliance with Touchstone Energy Cooperatives

## History and Uses

- Initiated development in 1996: Investment \$2.3 M
- Clearinghouse for publicly-funded research, data, and consumer information
- 2.8 million visits to-date [60 million “hits”]  
(about 300 visits during the course of this talk!)
  - We have users from every state
  - 91% are homeowners or renters
  - Contractors, students, analysts as well....

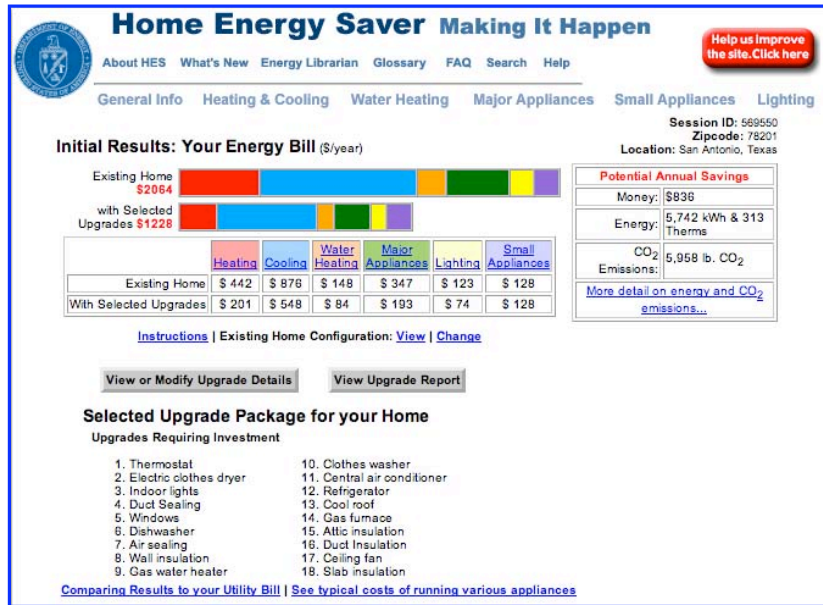
# Walkthrough



## Simple Input Level Has Only ~12 Questions

The screenshot shows the 'Home Energy Saver Making It Happen' section. It features a navigation bar with links: About HES, What's New, Energy Librarian, Glossary, FAQ, Search, and Help. A red button in the top right corner says 'Help us improve the site. Click here'. Below the navigation bar, there are tabs for 'General Info', 'Heating & Cooling', 'Water Heating', 'Major Appliances', 'Small Appliances', and 'Lighting'. The main heading is 'Energy Bill for Homes in San Antonio, Texas'. Below this, it states: 'Based on the city code you entered, here is a comparison of the energy costs (in \$/year) of an average home and an energy-efficient home in your area.' A bar chart compares the 'Average Home \$2018' (represented by a long red bar) and the 'Efficient Home \$1086' (represented by a shorter bar composed of segments for Heating, Cooling, Water Heating, Major Appliances, Lighting, and Small Appliances). A 'Potential Savings \$932' is highlighted. A button labeled 'About the Results' is also present. Below the chart, there is a 'Start Calculation...' button. The '1. Upgrade Calculation:' section contains two questions: 'What simple payback period would you like to use for selecting upgrades?' (with a dropdown menu set to '10 years') and 'What efficiency level would you like to model for the initial selection of upgrades?' (with a dropdown menu set to 'Energy Star / DOE recommended' and a note: '(you'll be able to individually adjust the efficiency of each upgrade later)'). The '2. Which city has the most similar climate to your house?' question has a dropdown menu set to 'San Antonio'. The '3. Year your house was built:' question has a text input field with '1989'. The '4. What is the conditioned floor area:' question has a text input field with '1800' sq. ft. The '5. How many stories above ground level are there?' question has a dropdown menu set to '1'. The '6. The front of your house faces:' question has a dropdown menu set to 'North'. The '7. What type of foundation does your house have?' question has a dropdown menu set to 'Slab-on-grade Foundation'. The '8. How much attic floor or roof insulation do you have?' question has a dropdown menu set to 'R-11 (4-6 inches)'.

## User Gets First-tier Answers Rapidly



## Ranked Retrofit Recommendations

		Bill Savings Compared to		Max. Cost				
		Existing Unit	New Unit	Estimated Cost	10 Year Payback	Simple Payback Time	Estimated Return on Investment	
Add/Remove	Upgrade	Upgrade Choice and Description		Estimated Cost	10 Year Payback	Simple Payback Time	Estimated Return on Investment	
<input type="checkbox"/> Check/Uncheck All Upgrades		Total for Selected Upgrades:		\$836	\$783	\$3,101	\$7,830	4 25%
<input checked="" type="checkbox"/>	Thermostat	ENERGY STAR-labeled programmable		\$88	\$88	Typical Costs \$70	\$880	1 125%
<input checked="" type="checkbox"/>	Dishwasher	Units EF=0.58 (ENERGY STAR)		\$37	\$27	Typical Costs \$30	\$270	1 90%
<input checked="" type="checkbox"/>	Electric clothes dryer	Switch to gas dryer		\$87	\$67	Typical Costs \$50	\$670	1 133%
<input checked="" type="checkbox"/>	Indoor lights	CFLs in high-use fixtures		\$74	\$74	Typical Costs \$68	\$740	1 72%
<input checked="" type="checkbox"/>	Duct Sealing	Units Reduce leakage to 6% of total airflow		\$197	\$197	Typical Costs \$300	\$1,970	2 66%
<input checked="" type="checkbox"/>	Windows	Units 2-pane/solar-control low-E/argon gas/wood (ENERGY STAR)		\$193	\$193	Typical Costs \$555	\$1,930	3 35%
<input checked="" type="checkbox"/>	Air sealing	Units 25% air leakage reduction		\$108	\$108	Typical Costs \$400	\$1,080	4 27%
<input checked="" type="checkbox"/>	Wall insulation	Units R-11 wall cavity		\$142	\$142	Typical Costs \$615	\$1,420	4 23%
<input checked="" type="checkbox"/>	Gas water heater	Units EF=0.62		\$24	\$24	Typical Costs \$130	\$240	5 17%
<input checked="" type="checkbox"/>	Clothes washer	Units MEF=1.42 WF=9.5 (ENERGY STAR)		\$72	\$46	Typical Costs \$210	\$460	5 20%
<input checked="" type="checkbox"/>	Central air conditioner	Units SEER=14 (ENERGY STAR)		\$282	\$46	Typical Costs \$280	\$460	6 14%
<input checked="" type="checkbox"/>	Refrigerator	Units 15% better than standard (ENERGY STAR)		\$44	\$8	Typical Costs \$50	\$80	8 12%
<input checked="" type="checkbox"/>	Cool roof	Units Solar reflectance = 0.50 (low-slope roofs)		\$38	\$38	Typical Costs \$315	\$380	8 12%
<input type="checkbox"/>	Gas furnace	Units AFUE=90 (ENERGY STAR)		\$59	\$59	Typical Costs \$1041	\$590	18 NCE
<input type="checkbox"/>	Attic insulation	Units R-38		\$50	\$50	Typical Costs \$1099	\$500	22 2%
<input type="checkbox"/>	Duct Insulation	Units R-6		\$21	\$21	Typical Costs \$480	\$210	22 NCE
<input type="checkbox"/>	Ceiling fan	Units ENERGY STAR-labeled		\$1	\$1	Typical Costs \$50	\$10	50 NCE
<input type="checkbox"/>	Slab insulation	Units R-5 slab edge		(\$24)	(\$24)	Typical Costs \$477	\$0	upgrade increases energy use


# Printable “Retrofit Report”

## measure x measure

### Ducts

Have your ducts professionally sealed to reduce leakage
<b>Economic Benefits</b> <a href="#">Estimated Annual Bill Savings: \$197</a> <a href="#">Estimated Lifetime Energy Cost Savings: \$2955</a> <a href="#">Upgrade Cost: \$300</a> <a href="#">Return on Investment: 66%</a> <a href="#">Upgrade pays for itself in: 2 years</a>
<b>Additional Benefits:</b> Sealing leaky ducts can help improve comfort and avoid indoor air pollution problems, fire hazards, and rooftop ice-dam formation during the winter.
<b>Upgrade Description:</b> Have your ducts professionally sealed so that the duct leakage is no more than 10% total (supply and return) as a percent of fan flow. The average forced-air duct system loses about 30% of the energy produced by the furnace or air conditioner in the course of distributing air to the rooms. This energy loss can be reduced by sealing duct joints with mastic or high-quality duct tape, and insulating ducts in unconditioned spaces.
<b>Note:</b> The annual bill savings and cost-effectiveness assume that your ducts are sealed to 10% total leakage.
<b>Purchasing Tips:</b> <ul style="list-style-type: none"> <li>• To get the level of air sealing specified above, you probably will have to have your ducts sealed by a qualified professional.</li> <li>• Use high quality duct sealing materials: Underwriters Laboratories-tested UL 181 mastics and tapes listed for duct sealing, or AEROSEAL® sealant.</li> <li>• Make sure you have your ducts professionally tested with a fan flow metering device after sealing. Ask your contractor for a report documenting the final leakage level; the report may help increase the resale value of your house. Also have the ducts tested prior to sealing, so that you can see how much improvement has been made. See the ENERGY STAR® Specifications for Ducts web site for further information about testing.</li> </ul>
<b>More Information</b> <ul style="list-style-type: none"> <li>• <a href="#">ENERGY STAR® Duct Sealing Recommendations</a></li> <li>• <a href="#">Aerosol-Based Duct Sealing</a></li> <li>• <a href="#">General Information from DOE</a></li> <li>• <a href="#">EPA's brochure "Should You Have the Air Ducts in Your Home Cleaned?"</a></li> <li>• <a href="#">An Introduction to Residential Duct Systems</a></li> </ul>

## Detailed Results Available as Well



# Home Energy Saver Making It Happen

[About HES](#)
[What's New](#)
[Energy Librarian](#)
[Glossary](#)
[FAQ](#)
[Search](#)
[E-mail](#)
[Help](#)


## Appliance and Water Heating Consumption

Here is the approximate energy consumed in a typical year, by your major appliances.

Appliance	Appliance Energy		Water Heating Energy			Total Energy	Total Cost
	Energy per Year	Cost per Year	Water Use (gal/day)	Energy per Year	Cost per Year		
First Refrigerator:	858 kWh	\$ 211	none	none	none	858 kWh	\$ 211
Stove:	33 therms	\$ 27	none	none	none	33 therms	\$ 27
Oven:	239 kWh	\$ 59	none	none	none	239 kWh	\$ 59
Clothes Dryer:	1456 kWh	\$ 359	none	none	none	1456 kWh	\$ 359
Clotheswasher	98 kWh	\$ 24	21	83 therms	\$ 68	98 kWh & 83 therms	\$ 92
Dishwasher Total	162 kWh	\$ 40	6	24 therms	\$ 20	162 kWh & 24 therms	\$ 60
Hot Water: Taps and Faucets	none	none	56	220 therms	\$ 181	220 therms	\$ 181
<b>Totals</b>	2813 kWh & 33 therms	\$ 720	83 gallons	326 therms	\$ 268	2813 kWh & 359 therms	\$

Appliance energy is the energy used by motors, heating elements, and burners inside your appliances. This number excludes the energy consumed by your water heater to supply hot water for appliances such as clothes washers and dishwashers.

## Energy, Costs, Emissions



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[Forward](#)
[Reload](#)
[Stop](#)

<http://hes3.lbl.gov/hes/Carbon.taff?~carbon&ess>

[Home](#)
[Bookmarks](#)
[Technology Quarter...](#)
[Google](#)
[Resume](#)
[DC Power for Data](#)

## Home Energy Saver Making It Happen

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### Detail of Whole House Annual Energy Use

		Your House	With Selected Upgrades	Savings
Whole House	\$	\$1,861	\$885	\$778
	Energy Emissions	5,740 kWh & 1,196 Therms 14,965 lb. CO <sub>2</sub>	3,469 kWh & 656 Therms 8,264 lb. CO <sub>2</sub>	2,270 kWh & 540 Therms 6,701 lb. CO <sub>2</sub>
Heating	\$	\$715	\$277	\$438
	Energy Emissions	234 kWh & 837 Therms 9,819 lb. CO <sub>2</sub>	147 kWh & 316 Therms 3,717 lb. CO <sub>2</sub>	87 kWh & 521 Therms 6,102 lb. CO <sub>2</sub>
Cooling	\$	\$0	\$0	\$0
	Energy Emissions	75 kWh 13 lb. CO <sub>2</sub>	75 kWh 13 lb. CO <sub>2</sub>	0 kWh 0 lb. CO <sub>2</sub>
Hot Water	\$	\$181	\$107	\$81
	Energy Emissions	326 Therms 3,809 lb. CO <sub>2</sub>	227 Therms 2,652 lb. CO <sub>2</sub>	99 Therms 1,157 lb. CO <sub>2</sub>
Major Appliances	\$	\$447	\$261	\$198
	Energy Emissions	2,813 kWh & 33 Therms 872 lb. CO <sub>2</sub>	1,144 kWh & 113 Therms 1,519 lb. CO <sub>2</sub>	1,669 kWh & (80) Therms (844) lb. CO <sub>2</sub>
Lighting	\$	\$152	\$91	\$81
	Energy Emissions	1,286 kWh 222 lb. CO <sub>2</sub>	772 kWh 133 lb. CO <sub>2</sub>	514 kWh 89 lb. CO <sub>2</sub>
Misc.	\$	\$157	\$157	\$0
	Energy Emissions	1,332 kWh 230 lb. CO <sub>2</sub>	1,332 kWh 230 lb. CO <sub>2</sub>	0 kWh 0 lb. CO <sub>2</sub>

## Home can be defined in great detail, if user wishes (inputs optional)

### The Non-Rectangular House Page

Save Answers

Backward S-shape

Since the house is not a rectangle, please enter the dimensions needed to estimate the energy consumption of the house.

This side faces the street

This side faces the street

This side faces the street

This side faces the street

Length of this entire side: 32.86

Length of this side: 10

Length of this side: 10

Length of this side: 10

Length of this entire side: 54.77



Walls

Save Answers

1. Please select the [construction type](#), [insulation level](#), and [exterior finish](#) of your house's walls

Insulation Level	Exterior Finish					
	Wood Siding	Stucco	Vinyl Siding	Aluminum Siding	Brick Veneer	None
R-0 (no insulation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-3 (1-2 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-7 (2-3 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-11 (3-5 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-13 (5-6 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-15 (6-7 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-19 (7-9 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-21 (9-10 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wood Frame					
R-11 (3-5 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-13 (5-6 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-15 (6-7 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-19 (7-9 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-21 (9-10 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

With Insulated Headers					
R-11 (3-5 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-13 (5-6 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-15 (6-7 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-19 (7-9 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-21 (9-10 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

With EPS Sheathing					
R-11 (3-5 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-13 (5-6 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-15 (6-7 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-19 (7-9 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-21 (9-10 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

With Insulated Headers and EPS Sheathing					
R-11 (3-5 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-13 (5-6 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-15 (6-7 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-19 (7-9 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-21 (9-10 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

With EPS Sheathing and OVE					
R-19 (7-9 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-21 (9-10 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

With OVE					
R-19 (7-9 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-21 (9-10 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-27 (10-12 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-33 (12-15 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
R-38 (15-16 inches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Structural Brick	
R-0 (no insulation)	<input type="radio"/>
R-5 (1 inch)	<input type="radio"/>
R-10 (2 inches)	<input type="radio"/>


Concrete Block	
R-0 (no insulation)	<input type="radio"/>
R-3 (1/2 inch)	<input type="radio"/>
R-6 (1 inch)	<input type="radio"/>


Straw Bale	
R-0 (no insulation)	<input type="radio"/>

Many wall construction options

## Lighting: two levels of detail

### Lighting

 **Option 1:** Based on the information you supply about the number of lighting fixtures, we can estimate the energy used by lights. This estimate will be based on typical hours of use and wattage from a field study that monitored lighting in homes.

 **Option 2:** If you prefer, you can provide the exact wattage and average hours of use per day for each fixture. This information will then be used to calculate lighting energy use. It will probably take you a few minutes to collect the wattage for each fixture.

[Save answers...](#)

How many light fixtures do you have in the following rooms (include portable (plug-in) lamps): Note: Multiple lights on a single circuit (switch) count as one fixture.

Kitchen	2	Dining Room	1	Living Room	3
Family Room	1	Master Bedroom	2	Hall	2
Bedroom(s) (enter the total for all other bedrooms, excluding closet lights)	2	Bathroom(s) (enter the total for all bathrooms)	2	Closet(s) (enter the total for all closets)	0
Utility Room	0	Garage	1	Outdoor Lighting	2
Other	0				

## Extensive Coverage of “Misc.” Uses

**Home Office** [Save Answers](#)

**Please enter detail if you own the following appliances**  
Whenever there is more than one of a particular item, enter the average per-unit usage for all units in the house.  
Do not select more than 24 hours in a day

Computer CPU  used   per

Computer Monitor  used   per

Laptop Computer Charger  used   per  (Time should indicate time that laptop is plugged into the charger)

Laser Printer  used   per  (Time should indicate time printer is actively printing)

Inkjet Printer  used   per  (Time should indicate time printer is actively printing).  
All inkjet printers naturally qualify as EnergyStar, therefore there is no difference in the energy used by EnergyStar vs. non-EnergyStar inkjet printers.

Router / DSL / Cable Modem  used   per

Thermal Fax Machine  used   per  Energy Star? ☐ Yes ☒ No

Inkjet Fax Machine  used   per

Home Copy Machine  machine

Time Copying   per

Time Left On but Idle   per


## Unique Tariff Module [~300 utilities] (Tariff database funded by BT-Standards)

**Home Energy Saver Making It Happen**

[About HES](#) [What's New](#) [Energy Librarian](#) [Glossary](#) [FAQ](#) [Search](#) [Help](#)

[General Info](#) [Heating & Cooling](#) [Water Heating](#) [Major Appliances](#) [Small Appliances](#) [Lighting](#)

**Energy Bill for Houses in Berkeley, California**  
Based on the zip code you entered, here is a comparison of the energy costs (in \$/year) of an average home and an energy-efficient home in your area.

Average House - \$1206  Potential Savings \$395

Efficient House - \$811

■ Heating ■ Cooling ■ Water Heating ■ Major Appliances ■ Lighting ■ Small Appliances

[See greenhouse gas emissions and energy consumption](#) [What should I do next?](#)

Select your utility from the list below

- ☐ Alameda City of [Read more information](#)
- ☐ Anaheim City of [Read more information](#)
- ☐ Imperial Irrigation District [Read more information](#)
- ☐ Los Angeles City of [Read more information](#)
- ☐ Modesto Irrigation District [Read more information](#)
- ☐ Pacific Gas & Electric Co [Read more information](#)
- ☐ Redding City of [Read more information](#)
- ☐ Riverside City of [Read more information](#)
- ☐ Sacramento Municipal Util Dist [Read more information](#)
- ☐ San Diego Gas & Electric Co [Read more information](#)
- ☐ Southern California Edison Co [Read more information](#)
- ☐ Southern California Water Co [Read more information](#)
- ☐ Turlock Irrigation District [Read more information](#)

[Choose this Utility](#)





# Energy Advisor Making It Happen

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## The Home Energy Librarian

 <p><a href="#"><u>Newsletters and Discussion Groups</u></a></p>	 <p><a href="#"><u>Product Information</u></a></p>	 <p><a href="#"><u>General Information</u></a></p>	 <p><a href="#"><u>Home Building</u></a></p>	 <p><a href="#"><u>State-by-State List of Energy Savings Programs &amp; Other Information</u></a></p>
 <p><a href="#"><u>Residential Energy Software</u></a></p>	 <p><a href="#"><u>Non-Profits and State Energy Resources</u></a></p>	 <p><a href="#"><u>Construction Standards</u></a></p>	 <p><a href="#"><u>Home Energy Rating Systems and Financing</u></a></p>	 <p><a href="#"><u>Answer Desk</u></a></p>

[Suggest a Link](#)

9

EERE: Information Center - Mozilla

http://www1.eere.energy.gov/informationcenter/

U.S. Department of Energy  
Energy Efficiency and Renewable Energy

### EERE Information Center

The EERE Information Center answers questions on EERE's products, services, and 11 technology programs, refers callers to the most appropriate EERE resources, and refers qualified callers to the appropriate expert networks.

Technical and programmatic information for the residential, commercial, institutional, industrial and transportation sectors is also immediately available through the [EERE Web site](#).

Other ways to find the information you need include:

- Visiting the [EERE Online Catalog](#)
- Visiting the [A Consumer Guide to Energy Efficiency and Renewable Energy Web site](#)
- [Searching](#) EERE's Web site for online resources
- Reviewing EERE's [Industrial Information, Tools and Publications](#)

You may contact the EERE Information Center with questions on EERE's products, services, and 11 technology programs by calling 1-877-EERE-INF (1-877-337-3463) or by completing and submitting the form below. A customer service specialist or energy expert at the EERE Information Center will respond to your inquiry.

Fields with asterisks are required. Please note that we are only able to respond to inquiries from the United States.

First Name\*:  MI:

Last Name\*:

Title:

Organization:

Address 1\*:

Address 2:

City\*:

State\*:  Zip Code:

Phone:

Fax:

E-mail\*:

Profession\*:  Private Citizen/Homeowner/Consumer

Please input your question\*:

The Home Energy Saver Glossary - Mozilla

http://hes.lbl.gov/hes/glossary.html

Home Energy Saver

Energy Advisor Making It Happen

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### Glossary of Energy Terminology

- [Heating, Ventilation and Cooling Terminology](#)
- [Insulation Terminology](#)
- [Window Efficiency Terminology](#)
- [Water Heater Terminology](#)
- [Lighting Terminology](#)

#### Heating, Ventilation and Cooling Terminology

**System Capacity**  
System capacity is a measurement of the total amount of heat or cooling your furnace, heat pump or air conditioner can produce in one hour. This amount is reported in Btu/hr on the nameplate of your equipment.

**Btu**  
Btu, short for British Thermal Unit is a unit of heat energy. One Btu is the amount of heat needed to raise the temperature of one pound of water 1°F. To get a rough idea of how much heat energy this is, the heat given off by burning one wooden kitchen match is approximately one Btu.

**AFUE**  
The AFUE, or Annualized Fuel Utilization Efficiency, is the ratio of the total useful heat your gas furnace delivers to your house to the heat value of the fuel it consumes. [Click here to see a more complete description of AFUE.](#)

**Heat Pump**  
A heat pump is basically an air conditioner with a reversible valve that allows it to operate in reverse, removing heat from your house and shunting it outdoors in the summer, and removing heat from outdoor air and shunting it into your house in the winter. Because heat pumps do not actually create heat—they just move it from one place to

The Home Energy Saver Answer Desk - Mozilla

http://hes.lbl.gov/hes/answerdesk.html

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**Home Energy Saver** **Energy Advisor** **Making It Happen**

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## The Home Energy Saver Answer Desk

**General Comment:** most answers to questions about home energy use depend heavily on your personal situation -- the climate where you live, your energy usage patterns, home size, configuration and features. For this reason, we can give general guidance here, but for a more definitive answer you should use the Energy Advisor to assess your own situation.

Not finding what you need here? Try DOE's [Information Center](#).

### General

1. [What is the typical energy use of household appliances?](#)
2. [What's the most common mistake people make in trying to save energy around the house?](#)
3. [We don't own a home; we rent an apartment. What can we do?](#)
4. [We have an older house. Which should we do first: insulate or replace the furnace?](#)
5. [My neighbor's bills are much lower than mine, even though they have children, and are home more than we are. Why are my bills so high?](#)
6. [What's the single biggest user of electricity in my house?](#)
7. [I was trying to find an estimate of the expected savings of an ENERGY STAR New Home \(30% better than Model Energy Code\) versus an "average" existing home. Your estimates seem to be oriented to retrofits using Energy Star equipment, as was clear once I got into the details. Have you also done, or do you have a reference on the savings with the Energy Star new home? That would presumably come out somewhat better than the full retrofit case.](#)
8. [How about energy savings in my car?](#)
9. [What are the benefits of energy efficiency besides saving energy?](#)

### Heating, Ventilation and Air Conditioning

1. [How much energy can I save by using fans instead of my air conditioner?](#)
2. [Should I use portable room heaters to lower my energy bills?](#)
3. [What information can you give me on air-to-air heat pumps for the home?](#)
4. [Does it pay to run a large duct from the outside of the house to the furnace to provide outside air for combustion? Contractors provided a passive supply of air along with the installation of our new furnace in St. Paul, Minnesota and we are wondering if it is worthwhile with a 30-year old furnace in Macomb, Illinois.](#)
5. [How can I tell if the contractor who is putting in a new furnace is gouging me on the price?](#)
6. [We have been very unhappy with our current heat pump and are wondering whether to install a new one or convert to natural gas. What factors should we consider?](#)
7. [If I shut off my heater or air conditioner when I'm gone from the house, doesn't it cost more to heat or cool the house back to the right temperature once I return?](#)

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# Energized Learning

[Printer version](#)

## Students

- Lessons
  - [Getting Started](#)
  - [Bringing It Home](#)
  - [Unit Conversions](#)
- Resources
- Links
- Workshops

This web site is designed for middle and high school students, their teachers and their parents. The more advanced elements of the lessons are applicable to college-level courses. The site includes lessons and activities that develop specific skills and knowledge students are expected to learn in science, mathematics, economics and social sciences and politics. Energy supply, conversion and use is central the quality of life for all people. It is our hope that students, teachers and parents will develop a better understanding of energy and its complex interrelationships.

Mathematics, science, economics, social and political science teachers will find a list of student lessons and activities with keys to subject matter standards.

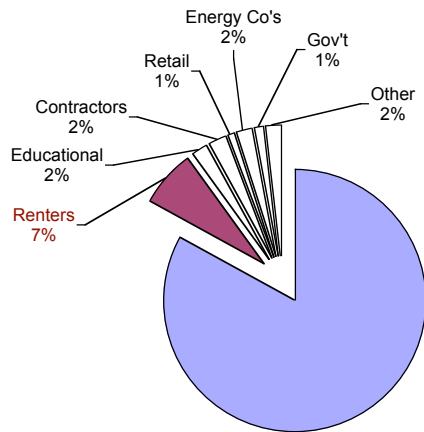
As students work through one or more of the standards-based lessons they will be exposed to the following concepts:

- Energy and the environment are linked — students will compare the amount of carbon dioxide, a greenhouse gas, emitted to the atmosphere as a result of energy use choices in their homes.
- Quality of life can be increased without increasing energy use — students analyze the impact of energy efficient options for services, such as lighting and heating that provide for conveniences, comfort, and entertainment
- Achieving energy efficiency is an investment, not an expenditure — students analyze the impact of energy efficient investments on their annual energy costs.
- Understanding and managing energy use requires concepts and information from many areas — Students will learn that planning for an energy efficient future involves knowledge of science, mathematics, economics and social science.

## Teachers

- Why Use the Energized Learning Site?
- How Will Teachers & Students use the Energized Learning Site?
- Lessons
  - [Getting Started](#)
  - [Bringing It Home](#)
  - [Unit Conversions](#)
- Resources
- Links

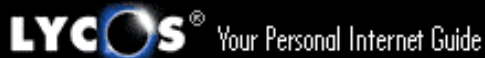
## Users (feedback form respondents)



### Non-household examples:

- Research
- Forecasting
- Air-Force: Housing developers required to document performance using HES
- Insulation Manufacturers: customer/contractor tools
- High Schools & Colleges: *Energized Learning*
- Utilities: customer service (linked or *integrated* into websites)

## Accolades







## Local Papers (32+ states) (partial list)

AR – Searcy Daily Citizen	MA – The Herald News	PA – The Philadelphia Inquirer
CA – Gilroy Dispatch	MD – Baltimore Sun	SC – The State
CO – Denver Rocky Mountain News	MN – Minneapolis Star Tribune	TX – The Eagle
DC – Washington Post	MI – Ann Arbor News	VA – Richmond Times-Dispatch
DE – The News Journal	MO – St. Louis Post-Dispatch	WA – The Yakima Herald Republic
FL – Miami Herald	MS – Daily Mississippian	WI – Oshkosh N'western
GA – Gainesville Times	MT – The Missoulian	
IA – Quad-City Times	NJ – Bergen Journal	
ID – Boise Weekly	NY – The Times Union	
IL – Chicago Sun Times	OH – Mount Vernon News	
IN – Fort Wayne Journal Gazette	OR – The Register-Guard	
KY – Courier-Journal	OK – Bartlesville Examiner	

## User Feedback

### Ongoing e-survey with 3372 responses thus far:

- Users in *every* state (8% CA, 6% TX, 5% NY, 5% FL)
- Return Visits: 18% of users (45% of contractors)
- Navigation: 89% say “OK” to “very easy”
- Required Input: 84% “Just Right” or “Too Simple”
- Content vs Calcs: Equally important!
- Will Return: 72% “yes”; 22% “undecided”
- Will Recommend: 74% “yes”; 17% “undecided”
- Implemented Efficiency Improvement based on site:
  - 33% (owners); 29% (renters)
    - 71% and 60% of the upgrades were for equipment as opposed to behavior changes

## Log Analysis

(excludes development team, robots, etc.)

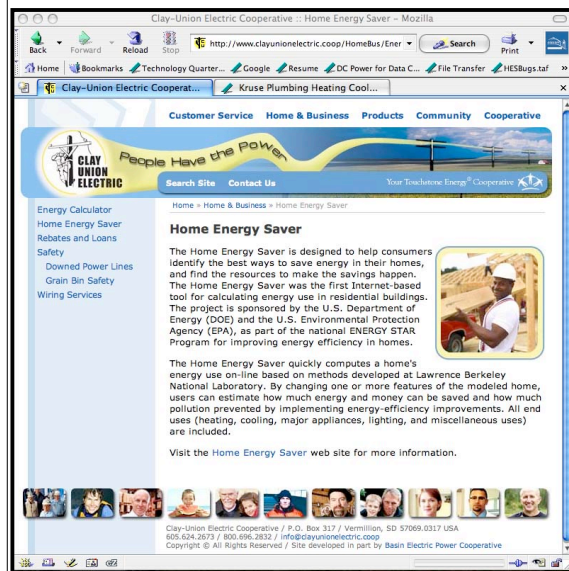
- Median time on site: 19 minutes [minimum info 10 seconds; preliminary “run” 1 minute]
- Median number of pages viewed per session: 11
- Wide use of various end-use modules
- Flat content is broadly visited
- 80% of users do “simple” runs; 20% “detailed”
- 80 pages (!) of free-form comments  
[indicative of a very engaged user community]



**“The Home Energy Saver is one of the government services that make paying taxes worthwhile.”**

Nick Wilder  
Homeowner  
Wheat Ridge, Colorado

## Early Co-op Adopters



- Clay-Union (SD)
- Polk-Burnett (WI)
- Jackson Electric (WI)
- Rappahannock Elec (VA)
- Community Energy (IL)
- Douglas Electric (OR)
- Hancock-Wood (OH)
- Iowa Lakes (IA)
- Red River Valley (MN)
- Ravalli Electric (MT)
- Pennyville (TN)

## **Potential Collaboration with Touchstone/NRECA**

1. Localize the tool (e.g. utility-specific tariffs for rural energy cooperatives; farm equipment; etc.)
2. New features (e.g. farm equipment; evaporative coolers....)
3. Information streams; decision-support
4. Training for co-op “help desk” staff; local home improvement contractors
5. Your ideas?

<http://HomeEnergySaver.lbl.gov>

**Thank You**

[EMills@lbl.gov](mailto:EMills@lbl.gov)